

Applicants: Steven Say-kyoun Ow and Tae Jin Eom  
U.S.S.N. 09/121,152  
AMENDMENT ACCOMPANYING  
REQUEST FOR CONTINUED EXAMINATION

Remarks

Responsive to the Office Action dated January 29, 2004, and the telephone conversations with the examiner and the undersigned, enclosed is a Declaration under 37 C.F.R. 1.132 comparing the prior art Japanese Patent Application JPA 59-9299 by Kao Soap Co. Ltd with the claimed method.

The licensee, Enzymatic Deinking Technologies, Norcross, GA, conducted comparative studies at the request of the examiner, to compare the deinking obtained under the conditions described in the Japanese application with the deinking obtained using the claimed methods.

As discussed with the examiner, the comparative tests were conducted exactly as described in Example 2 of the Japanese application, with the exception that the enzymes described in the Japanese application were no longer available. Neither company listed on page 3, Amano Pharmaceutical Co. nor Ueda Kagaku, had the described enzymes. Accordingly, the company obtained a comparable enzyme from another Japanese company, where the enzyme had comparable activity. The selected enzyme is an alkaline cellulase with a pH optimum of 8.0, and activity between 8 and at least pH 10.0. The enzyme used in the claimed method is a cellulase with a pH optimum of between 6.5 and 7.5.

As discussed with the examiner, the conditions described in Example 2 (and in Example 1) require addition of 1% NaOH. This yields a pH of 10.6. No where other than the examples is a defined pH or amount of NaOH provided.

The results are surprising since better results are obtained in the absence of the NaOH, using an acidic or neutral cellulase. The prior art makes it clear that it was believed that a strong

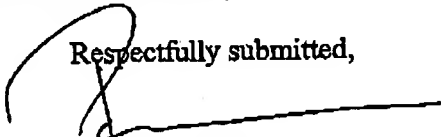
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base treatment of the paper would facilitate deinking. Since NaOH costs \$300/ton on a 50% basis, this can result in costs savings, which is also unexpected.

The claims have also been amended to more clearly define the claimed method as one in which the pulping and reaction with the enzyme is done at a pH of less than about 8, using an enzyme which is active at a pH of less than about 8.

Allowance of all claims as amended is earnestly solicited.

Respectfully submitted,

  
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Date: November 22, 2004  
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